Amendments to the Claims:

Please amend claims 8 and 10-12 as follows.

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1. - 7. (canceled)

8. (currently amended) A network controller having transmitting and receiving buffers, comprising an internal arbiter monitoring the transmitting and receiving buffers, and arbitrating access to a system bus between the transmitting and receiving buffers in response to requests for access to the system bus from the transmitting and receiving buffers,

wherein the internal arbiter comprises:

an emergency mode determination circuit receiving an occupancy level of data in the receiving buffer and a vacancy level of data in the transmitting buffer, determining whether a present operational state corresponds to an emergency mode as a function of the occupancy level and the vacancy level, and outputting an emergency mode signal;

a first determination circuit for determining if the occupancy level of the receiving buffer is increasing, and outputting a result of the determination as a first signal;

a second determination circuit for determining if the vacancy level of the transmitting buffer is increasing by comparing the vacancy level of the transmitting buffer with a previous transmitting buffer vacancy level that is stored in the second determination circuit and for outputting a result of the determination as a second signal;

a comparing circuit comparing the vacancy level of the transmitting buffer with the occupancy level of the receiving buffer and outputting a comparison result; and

a logic circuit outputting a permission signal to the receiving buffer or the transmitting buffer in response to the first signal, the second signal, and the comparison result, the permission signal granting access to the system bus to one of the transmitting buffer and receiving buffer.

9. (original) The network controller of claim 8, wherein the emergency mode determination circuit comprises:

a first comparing circuit comparing the occupancy level of the receiving buffer with a threshold occupancy level of the receiving buffer and outputting a first comparison result signal;

a second comparing circuit comparing the vacancy level of the transmitting buffer with a threshold vacancy level of the transmitting buffer and outputting a second comparison result signal; and

an AND means performing an AND operation on the first and second comparison result signals output by the first and second comparing circuits and outputting the emergency mode signal.

10. (currently amended) The network controller of claim 8, wherein the first determination circuit comprises:

a register storing [[the]]a previous occupancy level of the receiving buffer; and

a comparing circuit comparing an output of the register with the occupancy level of the receiving buffer and outputting the first signal.

11. (currently amended) The network controller of claim 8, wherein the second determination circuit comprises:

a register storing the previous transmitting buffer vacancy level ~~of the transmitting buffer~~; and

a comparing circuit comparing an output of the register with the ~~occupancy~~ vacancy level of the ~~receiving~~ transmitting buffer and outputting the second signal.

12. (currently amended) A method of controlling at least one of a transmitting buffer and a receiving buffer of a network controller, comprising:

receiving at least one request for access of a system bus from the transmitting buffer and the receiving buffer; and

determining a vacancy level of data in the transmitting buffer and an occupancy level of data in the receiving buffer and granting access to the system bus to one of the transmitting buffer and the receiving buffer, wherein granting access to the system bus comprises:

determining a present operational state as an emergency mode when both the transmitting buffer and receiving buffer request access to the system bus, when the occupancy level of the receiving buffer is higher than a threshold occupancy level of the receiving buffer, and when the vacancy level of the transmitting buffer is higher than a threshold vacancy level of the transmitting buffer; and

when the operational state is determined as the emergency mode, comparing the occupancy level of data in the receiving buffer with the vacancy level of data in the transmitting buffer, and wherein if the occupancy level of data in the receiving buffer is greater than the vacancy level of data in the transmitting buffer, then determining if the occupancy level of the receiving buffer is increasing by comparing the occupancy level of the receiving buffer with a previous receiving buffer occupancy level, and wherein if the occupancy level of data in the receiving buffer is not greater than the vacancy level of data in the transmitting buffer, then determining if the vacancy level of the transmitting buffer is increasing by comparing the vacancy level of the transmitting buffer with a stored previous transmitting buffer vacancy level, and granting access to the system bus to one of the transmitting buffer and the receiving buffer.

13. (previously presented) The method of claim 12, wherein when the present operational state does not correspond to the emergency mode, the occupancy level of the receiving buffer is compared with the vacancy level of the transmitting buffer, and one of the transmitting and receiving buffers is granted access to the system bus, and wherein

the receiving buffer is granted access to the system bus when the occupancy level of the receiving buffer is higher than the vacancy level of the transmitting buffer, and the transmitting buffer is granted access to the system bus when the vacancy level of the transmitting buffer is higher than the occupancy level of the receiving buffer.

14. (previously presented) The method of claim 12, wherein when the present operational state corresponds to the emergency mode, the occupancy level of the receiving buffer is compared with the vacancy level of the transmitting buffer, and one of the transmitting and receiving buffers is granted access to the system bus based on the comparison result, and wherein

when the occupancy level of the receiving buffer is higher than the vacancy level of the transmitting buffer, the receiving buffer is granted access to the system bus if the occupancy level of the receiving buffer is increasing; and

when the occupancy level of the receiving buffer is not higher than the vacancy level of the transmitting buffer, the transmitting buffer is granted access to the system bus if the vacancy level of the transmitting buffer is increasing.

15. (previously presented) The method of claim 14, wherein when the occupancy level of the receiving buffer is higher than the vacancy level of the transmitting buffer, the transmitting buffer is granted access to the system bus if the occupancy level of the receiving buffer is not increasing; and

when the occupancy level of the receiving buffer is not higher than the vacancy level of the transmitting buffer, the receiving buffer is granted access to the system bus if the vacancy level of the transmitting buffer is not increasing.

16. (previously presented) A computer readable recording medium recording a program that can execute a method of claim 12 using a computer.

17. (previously presented) The method of claim 12 wherein granting access to the system bus comprises receiving the request for access to the system bus from at least one of the transmitting and receiving buffers and granting access of the system bus to the one of the transmitting and receiving buffers sending the request.

REMARKS

Claims 8-17 are pending in the present application. Claims 8 and 10-12 are amended above. No new matter is added by the claim amendments. Entry is respectfully requested.

The Abstract of the disclosure is objected to for reasons stated in the Office Action at page 4, section 5. A marked-up version of the Abstract as amended in Amendment A, filed by Applicant on April 26, 2005 and refiled in Amendment B on November 9, 2005, is submitted herewith at page 2 of the present Amendment. In addition, a replacement Abstract is included at Appendix A. Applicant respectfully submits that the Abstract, as originally filed on July 8, 2003, is in proper conformance with 37 CFR 1.72. Removal of the objection is respectfully requested.

Claims 10 and 11 are objected to for reasons stated in the Office Action at page 2, section 2. Claims 10 and 11 are amended in a manner that is believed to be consistent with suggestions made in the Office Action at page 2, section 2. Removal of the objections of claims 10 and 11 are respectfully requested.

Claims 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang, *et al.* (United States Patent No. 5,546,543) in view of Brown, *et al.* (United States Patent No. 6,397,287) and further in view of Rudin, *et al.* (United States Patent No. 6,014,722), O'Brien (United States Patent No. 6,796,961) and Treadaway, *et al.* (United States Patent No. 6,907,048 - referred to hereinafter as "Treadaway")). Reconsideration and removal of the rejections, and allowance of the claims, are respectfully requested.

In the present invention as claimed in amended independent claim 8, a "network controller having transmitting and receiving buffers" comprises an "internal arbiter" that monitors the "transmitting and receiving buffers," and arbitrates access to a "system bus between the transmitting and receiving buffers" in response to "requests for access to the system bus from the transmitting and receiving buffers." The internal arbiter comprises an "emergency mode determination circuit," a "first determination circuit," a "second determination circuit," a

"comparing circuit," and a "logic circuit." The "emergency mode determination circuit" receives an "occupancy level of data in the receiving buffer" and a "vacancy level of data in the transmitting buffer," determines whether a "present operational state corresponds to an emergency mode as a function of the occupancy level and the vacancy level," and outputs an "emergency mode signal." The "first determination circuit" determines if the "occupancy level of the receiving buffer is increasing," and outputs a "result of the determination as a first signal." The "second determination circuit" determines if the "vacancy level of the transmitting buffer is increasing" by "comparing the vacancy of the transmitting buffer with a previous buffer vacancy level that is stored in the second determination circuit," and the "second determination circuit" outputs a "result of the determination as a second signal." The "comparing circuit" compares the "vacancy level of the transmitting buffer with the occupancy level of the receiving buffer" and outputs a "comparison result. The "logic circuit" outputs a "permission signal to the receiving buffer or the transmitting buffer in response to the first signal, the second signal, and the comparison result, the permission signal granting access to the system bus to one of the transmitting buffer and receiving buffer."

The present invention as claimed in amended independent claim 12 is directed to a "method of controlling at least one of a transmitting buffer and a receiving buffer of a network controller." "At least one request" is received for "access of a system bus from the transmitting buffer and the receiving buffer." A "vacancy level of data in the transmitting buffer" and an "occupancy level of data in the receiving buffer" is determined and "access to the system bus" is granted to "one of the transmitting buffer and the receiving buffer." A "present operational state as an emergency mode" is determined when "both the transmitting buffer and receiving buffer request access to the system bus," when the "occupancy level of the receiving buffer is higher than a threshold occupancy level of the receiving buffer," and when the "vacancy level of the transmitting buffer is higher than a threshold vacancy level of the transmitting buffer." When the "operational state is determined as the emergency mode," the "occupancy level of data in the receiving buffer" is compared with the "vacancy level of data in the transmitting buffer." If the "occupancy level of data in the receiving buffer is greater than the vacancy level of data in the

transmitting buffer," then it is determined if the "occupancy level of the receiving buffer is increasing by comparing the occupancy level of the receiving buffer with a previous receiving buffer occupancy level." If the "occupancy level of data in the receiving buffer is not greater than the vacancy level of data in the transmitting buffer," then it is determined if the "vacancy level of the transmitting buffer is increasing by comparing the vacancy level of the transmitting buffer with a stored previous transmitting buffer vacancy level," and "access to the system bus" is granted to "one of the transmitting buffer and the receiving buffer."

With regard to the rejection of independent claims 8 and 12, it is submitted that the combination of Yang, Brown, Rudin, O'Brien, and Treadaway fails to teach or suggest the present invention as claimed in amended independent claims 8 and 12. Specifically, it is submitted that none of the cited references, alone or in combination, teaches or suggests a "second determination circuit" for "determining if" a "vacancy level" of a "transmitting buffer" is "increasing" by "comparing the vacancy level of the transmitting buffer with a previous transmitting buffer vacancy level that is stored in the second determination circuit," as claimed in amended independent claim 8. In addition, it is submitted that none of the cited references, alone or in combination, teaches or suggests "determining if" a "vacancy level" of a "transmitting buffer" is "increasing" by "comparing the vacancy level of the transmitting buffer with a stored previous transmitting buffer vacancy level," as claimed in amended independent claim 12.

With regard to Yang, Brown, Rudin, and O'Brien, Applicants agree with the Office Action at page 7, line 22 through page 8, lines 1-3. Specifically, Applicants agree that none of the Yang, Brown, Rudin, and O'Brien references teaches or suggests "determining if the vacancy level of the transmitting buffer is increasing by comparing the vacancy level of the transmitting buffer with a previous transmitting buffer occupancy level...," as claimed in independent claim 12 as amended in Amendment B, filed on November 9, 2005. It therefore follows that none of the Yang, Brown, Rudin, and O'Brien references teaches or suggests a "second determination circuit" for "determining if" a "vacancy level" of a "transmitting buffer" is "increasing" by "comparing the vacancy level of the transmitting buffer with a previous transmitting buffer

vacancy level that is stored in the second determination circuit," as claimed in amended independent claim 8. It further follows that none of the Yang, Brown, Rudin, and O'Brien references teaches or suggests "determining if" a "vacancy level" of a "transmitting buffer" is "increasing" by "comparing the vacancy level of the transmitting buffer with a stored previous transmitting buffer vacancy level," as claimed in amended independent claim 12.

With regard to the rejection of claims 8 and 12 based on the combination of Yang, Brown, Rudin, and O'Brien, and Treadaway, and in response to statements made in the Office Action at page 8, line 22 through page 9, line 10, and page 13, lines 1-4, Applicants find no explicit or implicit teaching or suggestion in Treadaway of a "second determination circuit" for "determining if" a "vacancy level" of a "transmitting buffer" is "increasing" by "comparing the vacancy level of the transmitting buffer with a previous transmitting buffer vacancy level that is stored in the second determination circuit," as claimed in amended independent claim 8, or "determining if" a "vacancy level" of a "transmitting buffer" is "increasing" by "comparing the vacancy level of the transmitting buffer with a stored previous transmitting buffer vacancy level," as claimed in amended independent claim 12. Treadaway discloses a packet counter 272 that maintains a current count of complete Ethernet data packets in a transmit buffer 252A (see Treadaway, Fig. 12 and column 18, line 48 through column 19, line 8). However, there is no mention in Treadaway of the packet counter 272 being a "second determination circuit" that stores a "previous transmitting buffer vacancy level," as claimed in amended independent claim 8. Moreover, there is no mention in Treadaway of the current count of complete Ethernet data packets being a "vacancy level" that is compared to a "previous transmitting buffer vacancy level," as claimed in amended independent claims 8 and 12.

Treadaway further discloses a threshold compare block 274 that, based on the count provided by the packet counter 272, determines when a sufficient number of Ethernet packets are stored in the transmit buffer 252A (see Treadaway, column 19, lines 9-14). Thus, the Treadaway threshold compare block 274 is not concerned with determining a "vacancy level of the transmitting buffer," as claimed in claims 8 and 12, but, rather, is concerned with the number of

Ethernet packets currently in the transmit buffer 252A, and when that number exceeds a given level, packet retrieval is initiated.

Further, as noted in the Office Action at page 9, line 1, Treadaway teaches that the rate at which data is retrieved from the transmit buffer 252A can be controlled (see Treadaway at page 19, lines 54-57). However, there is no relationship between controlling a data retrieval rate as disclosed in Treadaway and "determining if the vacancy level of the transmitting buffer is increasing...," as claimed.

Accordingly, it is submitted that Yang, Brown, Rudin, O'Brien, and Treadaway, taken alone or in combination, fail to teach or suggest the invention set forth in amended independent claims 8 and 12. Since the combination of Yang, Brown, Rudin, O'Brien, and Treadaway fails to teach or suggest the invention set forth in amended independent claims 8 and 12, the claims are believed to be allowable over the cited references. With regard to dependent claims 9-11 and 13-17, it follows that these claims should inherit the allowability of the independent claims from which they depend. Accordingly, reconsideration and removal of the rejections of claims 8-17 under 35 U.S.C. 103(a) based on Yang, Brown, Rudin, O'Brien, and Treadaway, and allowance of claims 8-17 are respectfully requested.